

On the presence of *Elephas recki* at the Oldowan prehistoric site of Fejej FJ-1 (Ethiopia)

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SUMMARY: Fejej FJ-1 site, located in the lake Turkana basin, in southern Ethiopia, is an Oldowan prehistoric site. Its deposits yielded an abundant large mammal fauna associated with hominid remains. A tuff, which can be correlated to the KBS Tuff of the Koobi Fora Formation (1,88 My) or to the H-1 Tuff of the Shungura Formation (1,9 My) caps the archaeological level (unit III). The faunal association of Fejej FJ-1 can be correlated to member G (2,32 to 1,9 My) of the Shungura Formation. Below the hominid bearing level we can recognise a badland (unit I) where dental elements assigned to *Elephas recki* have been discovered. They are similar to the sub-species *E. recki atavus*, characterised by an increase of hypsodonty possibly related to an opening of the environment, which have been described by Michel Beden (1987) in the upper part of F and member G of Shungura Formation (Omo Valley).

1. INTRODUCTION

The Oldowan prehistoric site Fejej FJ-1 (Asfaw *et al.* 1991), located in the lake Turkana basin in southern Ethiopia, consists in a hill formed by fluvial deposits and capped by a tuff (Lumley *et al.* in prep.) (Bahain *et al.* 2000).

This tuff (Unit IV), which can be correlated to the KBS Tuff of the Koobi Fora Formation (1.88 Ma) or to the H-1 Tuff of the Shungura Formation of the Lower Omo Valley (1.9 Ma), overlies a fluvial fine-grained sequence in which the archaeological level (unit III) is intercalated. The archaeological level has yielded large mammals remains, hominid bones and an abundant oldowan lithic assemblage.

Below the hominid bearing level, fluvial large grained deposits individualise the “badland” (unit I).

Fossil remains come both from the archaeological level and surface collections.

Surface collections concern :

- The “badland”, also named unit I, which con-

sists of the base of the sequence

- Unit III, located beneath the tuff

- Unit V, overlaying the tuff

The archaeological level (unit III) provides large mammal bones, mainly assigned to *Aepyceros shungurae*, and showing tool marks. Two anatomical connections have been discovered during the excavation. Fragments of non blunt *Elephas recki* molar plates were also found. Unit I provides deciduous teeth, molar fragments and a split tusk of *Elephas recki*. Another Elephantidae, *Deinotherium*, is also represented by jugal teeth fragments.

2. CHRONOLOGY AND BIOSTRATIGRAPHY

The tuff (unit IV) was correlated on tephrochronological basis with the KBS Tuff of the Koobi Fora Formation (1.88 Ma) (Asfaw *et al.* 1991). Or to the H-1 Tuff of the Shungura Formation (1.90 Ma) (Haileab and Feibel 1993). Sediments of the units III and IV display a normal magnetic polarity, which allows to



Fig.1 - Posterior part of the second right upper molar FJ1 BL-SF291 of *Elephas recki* cf. *atavus* from Fejej 1.

place the sedimentation during the Olduvai subchron event (1.96-1.76 Ma) (Bahain *et al.* 2000). Finally, a RPE date of the archaeological layer resulted in an age of 1.9 +/- 0.32 Ma (Bahain *et al.* 2000).

The association, in unit V, of the two suids *Notochoerus scotti* and *Metridiocherus modestus*, according to Tim D. White (1995) chronological data, allows to situate the age of the site between 1.8 Ma (last *N. scotti* upon KBS Tuff) and 1.89 Ma (first *M. modestus* below KBS Tuff). *M. modestus* is also encountered in unit III. These data indicate that an age around 1.9 My can be suggested for unit III.

The rodents from the archaeological level, represented by *Arvicanthis* morphotype *niloticus/primaevus* and *Heterocephalus* cf. *atikoi*, also support this dating.

The biostratigraphical data don't show the difference between the "badland" and unit III. But the data show the correlation between those units and member G (2.32 to 1.9 Ma) of Shungura Formation in the Lower Omo Valley (Moullé *et al.* in prep.).

3. DESCRIPTION OF *ELEPHAS RECKI* DENTAL ELEMENTS

Fejej FJ1 *Elephas recki* remains have been

studied in accordance with the synthesis carried out by Michel Beden (1987) concerning Shungura Formation in Omo valley.

"Badland" provided two second lower deciduous teeth and a fragment of third one. A fragment of the posterior part of a molar showing three plates non really blunt is probably a right first upper molar.

An exploration of a limited area where some fragments of molar plates were outcropping shows two posterior molar parts which can be related to two upper molars belonging to the same individual. An isolated tusk is perhaps connected to those dental elements. These teeth are blunt with an altered occlusal surface which can not allow to observe precisely the enamel loop.

The second upper right molar shows, four posterior plates and the posterior face of a plate where the tooth is broken. Estimated maximal width of the fragment is about 70 mm. Maximal width of the teeth must have been more significant. Plate frequency is about 5 plates each 10 cm on this fragment, which do not represent the whole medial part of the complete tooth. Enamel loop thickness is about 3 mm.

The second upper left molar shows posterior platelet, two posterior plates and the posterior

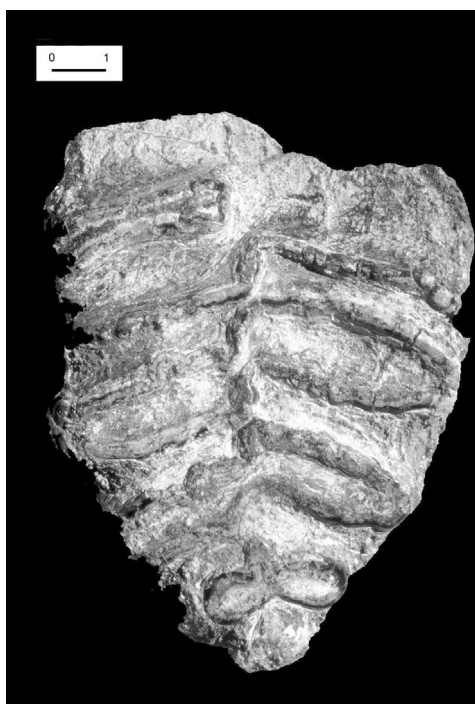


Fig.2 - Posterior part of second left upper molar FJ1 BL-SF292 of *Elephas recki cf. atavus* from Fejej 1.

side of a plate where the tooth is broken. Enamel loop thickness is about 3 mm.

“Badland” provided also two blunt molar fragments, which can correspond to posterior parts of second upper molars.

The second right upper molar (FJ1 BL-SF292) (Fig. 1) shows, three posterior plates and lingual fragment of plate IV (where the tooth is broken). The anterior side of plate III has lost its enamel loop on labial side because of tooth wear. Just as, on the lingual side, the enamel loops of the anterior side of plate III and the posterior side of plate IV form an islet. The plate patterns are tight at their centres; and the medial pillar is badly individualised. The enamel loop thickness ranges from 3 to 4 mm.

The second left upper molar (FJ1 BL 292) (Fig. 2) shows, two posterior plates and posterior half of plate III. General pattern is similar to the second upper molar Omo 75-1969-3054 (inferior G member of the Shungura Formation) of *Elephas recki atavus* described by Michel Beden and stored in Ethiopian

National Museum in Addis Ababa. The plates show clearly the individualised small medial pillars. The enamel loop thickness ranges from 3 to 4 mm.

The significant molar wear may explain the great enamel loop thickness observed on some areas.

The two fragments of second upper molars show enamel folds, as far as plate side (3 or 4 folds can be observed in every 10 cm). Fold amplitude is equivalent to enamel thickness, which corresponds to value 2 according to Michel Beden’s methodology. The general appearance of enamel loop fold is equal to classical pattern of *Elephas recki atavus* Arambourg, 1947 plates described by Beden (1987, p. 152).

According to Beden (1987), *Elephas* dental remains from upper part of F and G members of the Shungura Formation, assigned to *Elephas recki atavus*, show a great variability. Nevertheless, the molars are characterised by an increase of hypsodonty, size, plate frequency and enamel fold amplitude. Thus, *Elephas recki atavus* is more evolved than the sub-species *Elephas recki shungurensis* Beden, 1980 which is present from member C to lower part of member F of the Shungura Formation.

4. CONCLUSION

Despite their scarcity and their fragmentary nature, *Elephas recki* remains from Fejej FJ-1 unit I (badland) are similar to sub-species *Elephas recki atavus*, which have been described by Beden (1987) in F superior and G member of the Shungura Formation (Lower Omo Valley). The evolution of *Elephas recki atavus*, whose molars are characterised by an increase of hypsodonty, can be related to an opening of the environment.

5. REFERENCES

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